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<u>Year</u>	<u>Kolkhoz</u>	<u>Rayon</u>	<u>Crop</u>	<u>Increases</u> (centners/ha)
1940	Krasnyy Podvig (Red Achievement)	Klyuchevskiy	Spring wheat	4.1
1944	Pamyat' Lenina (Memory of Lenin)	Volchikhinskiy	" "	4.8
"	Imeni Sovnarkom	Yegor'yevskiy	Winter rye	1.9
1948	Luch Svobody (Ray of Freedom)	"	Spring wheat	5.4
"	Sibirskiy Pakhar' (Siberian Plowman)	"	" "	6.4
"	" "	"	Winter rye	5.8

The shelter belts on all these kolkhozes were not wider than 15-20 meters.

The advantages of shelter belts are manifold. They are the best possible means for holding snow and, when properly cared for, help in spreading snow evenly over the fields. According to observations made at the Lebyazhinskiy Experimental Station, snow cover on shelter belt-protected fields was one and one-half times deeper than in the open steppe.

The following table shows that snow is distributed better over those parts of fields where the shelter belt has been properly attended and has been thinned by cutting out superfluous growth.

<u>Date</u>	<u>Kolkhoz</u>	<u>Rayon</u>	<u>Condition of Belt</u>	<u>Snow Depth (cm)</u>			
				<u>In Belt</u> (m)	<u>Distance from Belt (m)</u>		
					<u>25</u>	<u>50-150</u>	<u>200-250</u>
28 Mar 45	Imeni Sovnarkom	Yegor'yevskiy	Unattended	161	157	35	23
			Attended	70	121	59	32
15 Mar 45	Komintern	Volchikhinskiy	Unattended	200	58	37	22
			Attended	100	110	45	28

The following figures show that soil freezes less deeply under snow cover than when it is bare.

<u>Date</u>	<u>No of Days Observed</u>	<u>Snow Cover (cm)</u>	<u>Type of Reading</u>	<u>Temperature (°C)</u>		
				<u>Above Snow</u>	<u>Under Snow</u>	<u>Difference</u>
1945	-	-	Average	-20.4	- 7.9	12.5
Jan - Feb 45	30	41-45	Absolute	-42.0	- 12.0	30.0
1949	-	-	Average	- 8.2	- 3.9	4.3
Jan 49	30	21-27	Absolute	-27.2	- 6.8	20.4

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Winter crops maintained themselves better under snow than when snow cover was lacking. In places where snow cover was blown away by the wind, 40 percent and more of the winter crops were not infrequently killed by frost. Shelter belts create favorable conditions for the preservation of winter crops and, consequently, permit expanded sowing in steppe regions.

Where the soil freezes less deeply in winter, it thaws out more quickly in spring. Melted snow soaks into the ground more easily and run-off is reduced.

The volume of water derived from run-off by the rivers of the Kulunda Steppe depends directly on the degree of forestation of the regions through which they flow.

By covering the Altay steppes with shelter belts, the forest ratio is increased, surface run-off reduced, moisture conserved, and at the same time the general water level raised.

Shelter belts also break the force of the wind, a function which is especially important during periods when dry winds blow. It has been established that when dry winds blow through the natural and planted forests of Altay Kray, the relative moisture content of the air rises 40 percent on an average. When they meet the forests, the winds lose their force, and evaporation from vegetation, soil, and surface water is reduced 30-35 percent.

At times when strong dry winds blow, trees evaporate through their leaves a greater quantity of the moisture which they draw from the deep levels of the soil through their roots. This increased quantity of moisture humidifies the air and, as a result, evaporation of moisture by agricultural crops is reduced. Such a situation is especially important during periods when the soil is dry and when the fate of the harvest is being decided on the fields.

In those places of Altay Kray where soil structure is light, where it is broken by continuous plowing and excessive harrowing, and where proper crop rotation (particularly, grass field rotation) is not practiced, dust storms occur frequently. In some years (as in 1945), as many as 40 dust storms were observed during the growing season in Kuldiga Steppe. Such storms often occur in the wintertime. As a result, seeds and sprouts of agricultural crops sometimes blow away or are covered up by drifting soil.

In addition to dust storms, ravine formation has been observed in the kray. It is increasing year by year as virgin land, especially in hilly areas, is plowed up. Planting trees along the ravines is the best method of combating erosion.

Observation has established that forests increase precipitation: vast forests increase it 12 percent on an average; small forests scattered throughout the steppe in the form of islands (Buzuluk, Bayan-Aul, and Borovoye pine forests, for example) increase it as much as 30-25 percent. As shelter belts and other tree plantings in the steppe increase, productive moisture from snow-fall, reduced evaporation, additional rainfall, and diminished run-off will increase.

Thus, larger harvests on shelter belt-protected fields are the result of the complex effect of forest growth on the water level and on microclimate (climate of the atmosphere near the ground).

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Shelter belts transform the steppe, create ideal working and living conditions, promote the development of agriculture, and render invaluable service in the struggle for large uniform crops.

Adding fruit trees and berry bushes to the belts considerably increases their value since the local population, thereby acquires new sources of fruits and berries.

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